UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

ANNUAL FOREST INSECT STATUS REPORT
REGION 1
1938

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This annual report meets a demand for a summary of forest insect conditions within the northern Rocky Mountain region. It summarizes the annual insect status reports received from all Forest Service and National Park Service ranger districts of this territory, as well as information collected by the personnel of the Forest Insect Laboratory at Coeur d'Alene, Idaho.

In a report of an insect infestation the reporting officer's remarks are of real importance. The form (96 R1) used in submitting data of each infestation places a greater value upon the officer's reaction to a situation than his "yes" or "no" answers to conventional questions. It is also desired to warn against a hasty decision as to so-called "normal" or "endemic" infestation. When more thoroughly examined these infestations often prove to be more serious than anticipated. All bark beetle infestations should be considered as potential epidemics, as the change from normal to epidemic conditions can occur so quickly that serious situations often exist before the danger is realized. Detailed information concerning each outbreak will show the need for a more thorough examination or the necessity of artificial control.

TABLE I
SUMMARY OF FOREST RANGER REPORTS
REGION 1 ONLY

	1936	1937	1938
Number of forests reporting	16	16	17
Number of ranger districts reporting	84	94	91
Number of insect infestations reported	134	177	162
Number of reports depicting no infestations	14	20	7
Number of secondary insects reported	18	25	23
Number of Dendroctonus reports	107	123	100
Number of fir engraver beetle reports	1	7	1
Number of spruce budworm reports	5	5	7
Number of hemlock looper reports	0	17	26
Number of larch sawfly reports	0	0	5
Increasing infestations	6	31	42
Decreasing infestations	93	47	49
Normal infestations	13	51	53
Infestations reported as no longer existing	9	23	17
Status of infestation uncertain	13	0	1

TABLE II
REPORT OF MISCELLANEOUS SECONDARY INSECTS
(I--Increasing, D--Decreasing, N--Normal)

	1938
Bitterroot National Forest	
Ips sp. (Possibly *Ips oregoni*)	D
Defoliator?	I
Cabinet National Forest	
Spruce Gall Aphis (*Adelges cooleyi*)?	N
Spider Mites on Cedar	I
Aphis (Ponderosa and Lodgepole Pine)	I
Adelges (*Pineus pinifoliae*)	N
Custer National Forest	
Tip Moth (*Rhyacionia* sp.) (2 reports)	D
Ips sp. (Ponderosa Pine)	D
Grasshoppers and Crickets (4 reports)	D
Deerlodge National Forest	
Ips oregoni (Lodgepole Pine)	D
Flathead National Forest	
Larch Sawfly (3 reports)	I - 1, D - 2
Spruce Gall Aphis	N
Fir Engraver (?)	D

Kootenai National Forest
Larch Sawfly (2 reports) D

TABLE III
SUMMARY OF MOST INSECT INFESTATIONS REPORTED
(NATIONAL FORESTS)

Insect	Year	Inc.	Dec.	Normal	Dropped	Total
	1938	11	23	35	10	79
	1937	7	38	33	18	96
	1936	5	65	11	8	89
	1935	24	79	8	6	117
	1934	17	52	8	0	77
Mountain Pine Beetle	1933	33	45	17	0	95
D. monticolae Hopk.	1932	64	20	12	0	96
	1931	51	27	14	0	92
	1930	60	24	14	0	98
	1929	45	14	23	0	82
	1938	0	1	2	1	4
	1937	0	2	3	3	8
	1936	0	3	3	0	6
	1935	1	6	1	1	9
Western Pine Beetle	1934	1	5	4	0	10
D. brevicomis Lec.	1933	5	2	1	0	8
	1932	2	2	0	0	4
	1931	2	1	1	0	4
	1930	4	1	0	0	5
	1929	0	3	4	0	7
	1938	4	3	3	1	11
	1937	2	4	9	1	16
	1936	0	9	3	0	12
	1935	2	10	3	0	15
Douglas Fir Beetle	1934	3	8	3	0	14
D. pseudotsugae Hopk.	1933	5	4	5	0	14
	1932	13	1	5	0	19
	1931	2	5	1	0	8
	1930	4	2	4	0	10
	1929	2	1	2	0	5

TABLE III (Cont.)

Insect	Year	Inc.	Dec.	Normal	Dropped	Total
	1938	0	1	0	0	1
	1937	5	2	0	0	7
	1936	0	1	0	0	1
	1935	1	0	0	0	1
	1934	0	1	1	0	2
True Fir Beetle	1933	4	0	0	0	4
Scolytus ventralis Lec.	1932	5	0	0	0	5
	1931	0	0	1	0	1
	1930	2	0	0	0	2
	1929	1	0	0	0	1
Engelmann Spruce Beetle	1938	2	1	3	0	6
Dendroctonus engel-	1937	1	2	1	1	5
manni	1936	0	0	0	0	0
Looper	1938	19	4	1	2	26
Ellopia fiscellaria	1937	15	0	2	0	17
lugubrosa	1936	0	0	0	0	0
	1938	3	1	3	0	7
	1937	0	1	3	1	5
	1936	0	2	2	1	5
	1935	1	3	2	1	7
Spruce Budworm	1934	3	4	0	0	7
Cacoecia funiferana	1933	3	4	4	0	11
Clem.	1932	3	7	1	0	11
	1931	1	7	1	0	9
	1930	6	5	6	0	17
	1929	4	9	3	0	16

Although the preceding data are not complete, they do serve to portray the trend of the different insect infestations within the northern Rocky Mountain region during the past decade.

MOUNTAIN PINE BEETLE INFESTATIONS
WHITE PINE

The following table presents a statistical comparison of the reports of mountain pine beetle infestations in white pine for the seasons of 1937 and 1938.

TABLE IV

Forest	No. of reports		Number of infestations							
			Increasing		Decreasing		Normal		Stopped	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
Cabinet	2	1	0	0	0	1	1	0	1	0
Clearwater	4	3	0	1	0	0	1	2	3	0
Flathead	1	1	0	0	1	1	0	0	0	0
Nezperce	1	0	0	0	0	0	1	0	0	0
Pend Oreille) Kaniksu)	3	5	1	2	2	0	0	2	0	1
Kootenai	4	1	0	0	2	1	1	0	1	0
St. Joe	4	3	1	0	2	0	1	3	0	0
Total	19	14	2	3	7	3	5	7	5	1

These data show a 26 percent decrease in the number of infestations reported in 1938. It must be recognized that these reports cover only those situations that are familiar to the reporting officer and in his opinion warrant such consideration. There are infestations of the mountain pine beetle in all of the white pine stands of the region, which obviously vary in severity. Although annual reports of all these different situations would be a condition very much to be desired, such data can only be obtained from a systematic survey. However, the information made available through the ranger reports as now submitted serves its purpose of bringing alarming situations to the attention of regional officers.

All white pine stands of the Clearwater, Coeur d'Alene and Kootenai Forests, as well as some questionable areas on the St. Joe and Kaniksu Forests, were included in the 1938 survey program of the Forest Insect Laboratory at Coeur d'Alene, Idaho. Although mountain pine beetle infestations were found in all white pine stands, there were only small areas on the Clearwater and Kootenai Forests where control measures were considered necessary. There is also a severe epidemic of this insect within the Rapid Lightning drainage of the Kaniksu Forest. As the timber within this drainage is mostly owned by private interests, and as the area will be logged in 1940, no control measures will be instituted.

In addition to the above surveys the Cabinet Forest reports a light infestation on Cole and Trout Creeks, that is not considered serious. The infestation on the south fork of the Flathead River, which has decreased materially during the past few years, was again reported by the Flathead Forest.

The program of forest insect surveys, with the annual ranger reports, has provided an accurate record of the status of mountain pine beetle infestations within the white pine stands of the region.

These data show both past and current losses are more severe than anticipated, and that if outbreaks of this insect are allowed to proceed unchecked, such a large percent of many merchantable timber stands will be destroyed that cutting the light residual stand will become an uneconomical procedure.

TABLE V
MOUNTAIN PINE BEETLE INFESTATIONS
LODGEPOLE PINE

Forest	No. of reports		Number of infestations							
			Increasing		Decreasing		Normal		Stopped	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
Absaroka	2	1	1	0	0	0	1	1	0	0
Beaverhead	7	6	0	0	4	3	2	2	1	1
Bitterroot	5	4	0	0	3	1	2	2	0	1
Cabinet	4	0	0	0	2	0	1	0	1	0
Clearwater	3	2	0	0	0	0	2	2	1	0
Deerlodge	7	6	0	0	1	1	3	4	3	1
Flathead	3	3	0	0	1	1	2	2	0	0
Gallatin	4	7	0	2	1	0	2	1	1	4
Helena	3	3	0	0	2	2	1	1	0	0
Kootenai	1	1	0	0	0	1	0	0	1	0
Lolo	5	5	0	0	2	3	3	2	0	0
Lewis and Clark	1	0	1	0	0	0	0	0	0	0
Nezperce	4	4	0	0	2	2	0	1	2	1
St. Joe	2	1	1	0	0	0	1	0	0	0
Total	51	43	3	2	18	14	20	18	10	8

The preceding tabulation shows a reduced number of 1938 reports which indicate a further reduction in the mountain pine beetle epidemic that has caused such widespread destruction within the lodgepole forests of Idaho and Montana. This condition is as expected, for on the Beaverhead, Bitterroot, Clearwater, and Nezperce forests practically all of the host material has been destroyed.

The Absaroka Forest reports an infestation distributed throughout the lodgepole pine stands of the Yellowstone ranger district. On the Beaverhead Forest, where a large percentage of the stand has been destroyed, decreasing infestations were reported from all ranger districts. Comparable conditions exist on the Bitterroot Forest adjacent, where the destruction of lodgepole pine stands has been equal to that of the Beaverhead. Although four infestations were reported from the Cabinet Forest in 1937, it can be assumed that they are now of no importance, as none were recorded during the past season. Two normal infestations were reported from the Clearwater Forest, and it

is assumed that due to the shortage of host material these outbreaks will soon cease to exist. Although infestations were reported from all the ranger districts of the Deerlodge Forest as distributed throughout all lodgepole pine stands, none of them were considered as being serious. Scattered infestations were reported from three ranger districts of the Flathead Forest, with the situation on the Big River district being considered as somewhat alarming. On the Gallatin Forest infestations of the mountain pine beetle are scattered throughout all lodgepole pine areas, with increasing outbreaks reported from the Gallatin River drainage, and Tobacco Root Mountains. Three ranger districts on the Helena reported decreasing or normal infestation. Although there have been serious losses of lodgepole in the Upper Ford district of the Kootenai Forest, the epidemic is now considered as normal. On the Lolo Forest five ranger districts reported either decreasing or normal infestation, with losses during the past decade being as heavy as 70 percent of the original lodgepole stand. No threatening situations were reported from the Nezperce Forest, although very heavy losses of lodgepole have occurred during the past ten years. An infestation that has been present within the Fishhook and St. Joe River area of the St. Joe Forest is now considered as decreasing.

From these reports it is apparent that the epidemic of the mountain pine beetle which during the past 15 years has destroyed such a large percentage of the lodgepole pine of Idaho and Montana has practically run its course. Only in a few areas are there situations that are of sufficient importance to warrant further consideration.

TABLE VI
MOUNTAIN PINE BEETLE INFESTATION
WHITEBARKPINE AND PONDEROSA PINE

Forest	Whitebark pine							
	Increasing		Decreasing		Normal		Stopped	
	1937	1938	1937	1938	1937	1938	1937	1938
Absaroka	2	1	0	0	0	1	0	0
Beaverhead	0	2	1	1	1	0	0	0
Bitterroot	0	0	2	1	1	1	0	0
Clearwater	0	1	0	0	1	0	1	0
Deerlodge	0	0	1	0	0	0	1	0
Gallatin	0	1	1	0	2	1	0	0
Lolo	0	0	0	0	0	0	0	0
Nezperce	0	0	1	1	0	0	0	0
St. Joe	0	0	0	0	0	0	0	0
Total	2	5	6	3	5	3	2	0

TABLE VI (Cont.)

	Ponderosa Pine							
Bitterroot	0	0	3	1	3	2	0	1
Cabinet	0	0	1	0	0	0	0	0
Clearwater	0	0	0	1	0	0	0	0
Custer	0	0	1	0	0	0	0	0
Deerlodge	0	0	0	0	0	0	0	0
Lolo	0	0	0	0	0	2	0	0
St. Joe	0	0	1	0	0	0	0	0
Nezperce	0	0	0	1	0	1	0	0
Total	0	0	6	3	3	5	0	1

The preceding reports do not provide a very exact picture of the whitebark pine infestations within the northern Rocky Mountains. Although there are infestations of the mountain pine beetle in practically all whitebark pine stands, only 10 reports were received. However, these reports do show an infestation within nine of the forests within this territory, and in some instances serious losses were recorded.

During severe epidemics of the mountain pine beetle in lodgepole pine, there is always some loss in associated or adjacent stands of ponderosa pine. These losses, which vary in severity with the seriousness and extent of the lodgepole pine infestation, have always ceased with the cessation of the primary epidemic. Although the same number of situations were recorded in 1938 as in 1937, none were considered as alarming.

TABLE VII
WESTERN PINE BEETLE INFESTATION
PONDEROSA PINE

Forest	No. of reports		Number of infestations							
			Increasing		Decreasing		Normal		Stopped	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
Cabinet	1	0	0	0	0	0	0	0	1	0
Clearwater	1	0	0	0	0	0	0	0	1	0
Kaniksu	0	1	0	0	0	0	0	1	0	0
Kootenai	1	0	0	0	0	0	1	0	0	0
Lewis and Clark	1	1	0	0	0	0	0	0	1	1
Lolo	2	0	0	0	0	0	2	0	0	0
Nezperce	2	1	0	0	2	0	0	0	0	0
St. Joe	0	1	0	0	0	1	0	1	0	0
Total	8	4	0	0	2	1	3	2	3	1

These few reports can be taken as depicting the general status of the western pine beetle infestation throughout the ponderosa pine stands of the region. Of the four infestations reported none were considered as alarming, although the Nezperce situation warrants further consideration.

TATLE VIII
DOUGLAS FIR BEETLE INFESTATION
DOUGLAS FIR

Forest	No. of reports		Number of infestations							
			Increasing		Decreasing		Normal		Stopped	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
Absaroka	2	2	0	1	0	0	1	0	1	1
Bitterroot	1	0	0	0	0	0	1	0	0	0
Cabinet	0	0	0	0	0	0	0	0	0	0
Coeur d'Alene	0	1	0	1	0	0	0	0	0	0
Flathead	6	3	0	0	3	2	3	1	0	0
Gallatin	2	3	1	2	0	0	1	1	0	0
Helena	0	1	0	0	0	1	0	0	0	0
Kaniksu	0	1	0	0	0	0	0	1	0	0
Kootenai	3	0	0	0	1	0	2	0	0	0
Lolo	0	0	0	0	0	0	0	0	0	0
Nezperce	1	0	0	0	0	0	1	0	0	0
St. Joe	1	0	1	0	0	0	0	0	0	0
Total	16	11	2	4	4	3	9	3	1	1

Although the preceding tabulation shows a decrease in the number of situations reported, it is believed that the actual status of the Douglas fir beetle situation throughout the northern Rocky Mountains is as serious, if not more so than in 1937. Of the eleven reports received increasing outbreaks were recorded on the Absaroka (1), Coeur d'Alene (1), and Gallatin (2). Information concerning the Douglas fir beetle infestation indicates that past losses have been greater than anticipated.

TABLE IX
ENGELMANN SPRUCE BEETLE INFESTATIONS
IN SPRUCE

Forest	Number of reports		Character of infestations reported					
			Increasing		Decreasing		Normal	
	1937	1938	1937	1938	1937	1938	1937	1938
Absaroka	0	1	0	1	0	0	0	0
Clearwater	0	1	0	0	0	0	0	1
Custer	1	0	0	0	0	0	1	0
Deerlodge	1	0	0	0	1	0	0	0
Gallatin	2	1	1	1	1	0	0	0
Kootenai	0	1	0	0	0	1	0	0
St. Joe	1	1	0	0	0	0	1	1
Total	5	5	1	2	2	1	2	2

A severe epidemic of the Engelmann spruce beetle was found to be present within the spruce stands of the Yellowstone Park in 1937. This alarming situation was immediately called to the attention of the forest supervisors of this territory with the request that all spruce stands be given careful consideration in the annual insect status reports. In response to that request five infestations from four different forests were reported, which were the first ever received. During the past season three other forests reported outbreaks of this insect; however, as the total number of reports (5) was the same as in 1937, three of the previously reported situations were obviously dropped as not justifying further consideration. On the Absaroka Forest an infestation within a very popular recreational area was considered of sufficient severity to warrant the institution of control. The other outbreaks recorded were not considered as dangerous, although large quantities of timber had been killed. As the foliage of insect-killed spruce trees falls when only slightly faded, there are no red tops to excite suspicion as to the existence of an outbreak. This condition makes infestations of the Engelmann spruce beetle somewhat insidious in character and may permit serious situations to escape detection until the abundance of dead trees becomes alarming. Careful consideration should therefore be given to all spruce stands if destructive outbreaks of this insect are to be prevented.

HEMLOCK LOOPER
(Ellopia fiscellaria lugubrosa Hlst.)

The most spectacular forest insect epidemic that has occurred within this region for the past few years has been that of the hemlock looper, which appeared throughout the white fir stands of northern Idaho and western Montana in 1937. Although this is the first record available of an outbreak within the Inland Empire, the

hemlock looper has been known as a destructive forest insect on the Pacific Coast for many years. In 1936 large numbers of the adult moths were observed throughout the forests of northern Idaho; however, the previous defoliation was not sufficiently severe to attract attention. Early in July 1937 the foliage of white fir and all associated species of trees and shrubs in numerous areas turned brown as a result of the injury to the needles by feeding caterpillars. Later in the season myriads of adult moths were to be seen flying through the woods or resting upon bushes or trunks of trees. By the end of that season fifty-seven spots of severe "looper" defoliation had been reported to the Forest Insect Laboratory at Coeur d'Alene, Idaho, or observed by its officers. The defoliated areas which were located along ridge tops varied in size from a few to several thousand acres. In addition to these areas of severe defoliation, there were undoubtedly many other lightly infested spots which escaped detection.

During the past season twenty-six areas of looper defoliation were reported from the Cabinet (5), Clearwater (5), Coeur d'Alene (3), Flathead (2), Kaniksu (4), Kootenai (2), and St. Joe (5). Nineteen of these outbreaks were considered as increasing with the other seven decreasing. Although these reports serve to describe the status of the epidemic as well as its distribution throughout the region there are many other infested areas which were not included in this year's reports.

The future of this epidemic is rather difficult to foresee. Although it is believed that the severity of the outbreak within the different areas breaks after the first year of severe defoliation, there is no certainty of this belief or measurement of the damage that will occur during this period. Where white pine is growing in association with defoliated white fir, it has been severely defoliated and it is believed that many trees will die from the injury. As the hemlock looper is undoubtedly indigenous to this region it is believed that its natural enemies will soon reestablish a proper biological balance, although serious destruction of timber may occur during this period.

SPRUCE BUDWORM
(Cacoecia fumiferana Clem.)

Spruce budworm infestations were again reported from the Absaroka, Helena, and Nezperce Forests, with new situations being listed on the Bitterroot, Lolo, and Lewis & Clark. On the Helena the infestation is distributed throughout the entire Townsend Ranger District, and is considered as increasing in severity. On the Lolo Forest the outbreak is apparently quite new with considerable injury to spruce reproduction occurring. On the Lewis & Clark the infestation is considered as increasing in severity.

The first known epidemic of this insect within the western United States reached its peak in 1928, with some 789,000 acres being defoliated. Although the widespread epidemic no longer exists, new outbreaks have occurred, and in some areas the original outbreaks have persisted.

LARCH SAWFLY
(Lygaeonematus erichsonii Hartig.)

The first record of this insect within the western United States came from the Flathead National Forest in 1934.

The 1938 reports listed areas of larch sawfly defoliation on the Flathead (3) and Kootenai Forests (2), and the Glacier National Park (1). One of the Flathead situations and the one in the Glacier National Park were considered as new outbreaks being reported for the first time. On the north fork of the Flathead River, where the first outbreak of this insect occurred, the infestation is considered as decreasing in severity.

TWO-LINED LARCH SAWFLY
(Platycampus laricis Roh. and Midd.)
WESTERN LARCH SAWFLY
(Platycampus laricivorus Roh. and Midd.)

During the past season these two species of sawflies were again recorded in epidemic numbers on western larch near Granite, Idaho. A previous outbreak of these insects, subsequently described as new species, was recorded from this laboratory in 1921. The following season (1922) this severe epidemic was so effectively reduced by natural control, that there was no evidence of its existence. Apparently this condition will be repeated with the present outbreak, for although myriads of sawfly larvae were present, during the summer only a very few overwintering cocoons could be found. The agency responsible for this marked mortality is not known, although the severe warm weather during the later part of the season may have been a contributing factor.

TUSSOCK MOTH
(Hemerocampa pseudotsuga M. D.)

There are no known outbreaks of this insect within northern Idaho and Montana, although there is a rather severe epidemic on the Sawtooth National Forest near Ketchum, Idaho.

WEBWORM
(Archtidae sp.)

Alder and apple trees along the Clarks Fork River near Hope, Idaho, were severely defoliated by this insect during the past season.

BOX ELDER DEFOLIATOR
(Gracilaria negundella (?))

Practically all box elder trees in the southeastern portion of Idaho were severely defoliated by this insect during the 1938 season.

MISCELLANEOUS INSECTS

Of the miscellaneous insects included in the ranger reports there are a few which warrant further discussion. Spider mites were reported as causing severe injury to cedar on the Cabinet Forest. The tip moth (Rhyacionia sp.) infestations reported from the Custer are now considered as decreasing in severity. Although there were outbreaks of grasshoppers and crickets on the Custer in 1938, forest trees were not defoliated as during past seasons. Throughout the northern Rocky Mountain region large volumes of white fir and alpine fir are killed each year by the fir engraver (Scolytus ventralis Lec.) and the western balsam bark beetle (Dryocoetes confusus Sw.) respectively. During the past season there were the usual outbreaks of the Oregon pine engraver (Ips oregoni Eichh.) in ponderosa pine and lodgepole pine, which can in most cases be traced to some abnormal condition such as slash, windfalls, or other environmental disturbances. The woolly pine louse (Pineus pinifoliae Fitch) continues to do considerable damage to white pine reproduction, and Cooley's gall louse (Adelges cooleyi Gill.) continues to injure ornamental spruce trees.

GLACIER NATIONAL PARK

Although no definite survey was made of the timber stands of the Glacier Park, the status of insect conditions is rather well known. On the west side of the Continental Divide there are some annual losses of Douglas fir and lodgepole pine that may be more serious than anticipated at this time.

Along the highway in the St. Marys Lake area, there are a large number of trees of all species that are dying from rather intangible causes. Although bark beetles are found in some of these dying trees, they can not be considered as the primary agency of destruction. As previously stated in commenting upon this situation, it is believed that a proper explanation would rest in the disturbed ecological conditions resulting from deficient moisture as well as factors associated with highway construction.

The rather constant loss of alpine fir which continued during the 1938 season can hardly be avoided, as it would seem to be the natural elimination of old decadent trees. This loss is not serious, as prompt forestation is assured by the adequate understory of small trees.

A rather severe outbreak of the larch sawfly (Lygaeonematus erichsonii Hartig.) was recorded at the Walton ranger station. The future of this outbreak is difficult to predict, although serious damage is not anticipated.

Perhaps the most serious situation within the Glacier Park is the Douglas fir beetle infestation in the scorched trees of the 1936 Heaven's Peak fire. The damage of this situation rests in the possibility of the infestation developing to a magnitude which will endanger the adjacent uninjured timber stands. This area was examined last season and it is apparent that the insect population has increased materially within the scorched trees and in one instance uninjured trees adjacent have been attacked and killed. This situation will receive further consideration during the 1939 season.

YELLOWSTONE NATIONAL PARK

The timber stands of the Yellowstone Park were covered by a forest insect survey during the past season, the data from which, with the information submitted by the Chief Ranger's office, provides a very accurate description of existing conditions. These data show that the losses of whitebark pine resulting from attacks of the mountain pine beetle have been far more severe than anticipated, and that in some areas there is still an aggressive infestation. Some lodgepole pine losses have occurred where this species is growing in association or adjacent to areas of infested whitebark pine. In the northwest corner of the park an epidemic of the Engelmann spruce beetle has killed practically all of the Engelmann spruce trees above 8 or 10 inches in diameter. There are some scattered infestations of the Douglas fir beetle, although as yet these are not considered as being serious. A small outbreak of this insect in the Douglas fir stands at the Game Ranch was successfully reduced by control in the fall of 1937.

The killing of alpine fir by Dryocoetes confusus continued during the past season with no apparent changes in the severity of the losses. Although there was some feeding by the lodgepole sawfly (Neodiprion burkei Midd.) in the West Yellowstone area in 1937, no evidence of the insect was recorded in 1938. The lodgepole needle tier is still present in the lodgepole pine stands at West Yellowstone, with no apparent change in the severity of the infestation during the past few years.

There is an annual loss of lodgepole pine trees around the utility areas and geyser formation that can only be credited to the unnatural conditions to which the trees are subjected.

GRAND TETON NATIONAL PARK

Data from an insect survey of this park, which covered most of the timber stands, and from information furnished by the Chief Ranger's office*, permit an accurate description of insect conditions.

The mountain pine beetle infestation in the whitebark pine and lodgepole pine stands seems to have decreased in severity, although a potentially serious situation still exists within the lodgepole pine stand of the Windy Point area. During the past season a rather large number of infested lodgepole pine in the vicinity of the park headquarters were felled and treated, and it is apparent that if this epidemic continues the scenically valuable trees around the headquarters building and the Jenny's Lake area will be destroyed.

CONTROL PROJECTS - SEASON 1938

Forest Insect Surveys

As a part of the plan of forest insect surveys now being conducted by the Forest Insect Laboratory at Coeur d'Alene, the following areas were included in the past season's program.

Forest	Acres	Timber species	Insect
Coeur d'Alene	113,910	White pine	Mountain pine beetle
Kootenai	39,530	" "	" " "
Clearwater	118,280	" "	" " "
Private lands, C.T.P.A.**	169,640	" "	" " "
Yellowstone National Park	400,000	Lodgepole, whitebark pine, Engelmann spruce, Douglas fir	" " " Engelmann spruce beetle

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**Clearwater Timber Protective Association

Forest	Acres	Timber species	Insect (Cont.)
Teton National Park	7,630	Lodgepole pine, whitebark pine	Mountain pine beetle
Shoshone National Forest	20,580	Douglas fir	Douglas fir beetle
Check surveys:			
St. Joe	300	White pine	Mountain pine beetle
Kaniksu	17,280	" "	" " "
Weiser	1,000	Ponderosa pine	Western pine beetle
	888,150		

Reports covering each of these projects have been prepared and submitted to all interested parties.

Control -- Coeur d'Alene National Forest

Control measures that were instituted in October 1937 for the reduction of a severe spot of mountain pine beetle infestation in the head of Steamboat Creek on the Coeur d'Alene Forest were not completed due to inclement weather conditions. This project was reopened in the spring of 1938 and the work completed.

Control -- Shoshone National Forest

The eighth year of control against an outbreak of the Douglas fir beetle in the Douglas fir stands of the Cody Canyon, Shoshone National Forest, was again instituted in October and will continue through the present winter. This infestation is in timber stands weakened by spruce budworm defoliation, which has provided an unlimited supply of attractive host material for maintaining the bark-beetle population at an aggressive status.

As the severity of the budworm defoliation in 1937 was much less than during previous years, it was believed that this epidemic had run its course and that there would be no additional supply of weakened host materials for the attacks of the Douglas fir beetle. This prediction held true for 1938 at least, for in only a few areas was the budworm defoliation of sufficient severity to be recorded. Although handicapped by the persistent budworm epidemic, this project has successfully protected the scenic forests around the many resorts of the area, and along the highway leading to the east entrance of the Yellowstone Park, from the attacks of the Douglas fir beetle.

Proposed Control Operations

Artificial control measures against outbreaks of the mountain pine beetle in white pine will be instituted in the Clearwater and Kootenai National Forests during the coming season. Thirty-two thousand dollars have been allotted for these two projects, which will start as early as field conditions will permit.

SUMMARY

The program of forest insect surveys now being conducted by the Forest Insect Laboratory at Coeur d'Alene, Idaho, may raise some question as to the continued value of the annual ranger report. As it is doubtful if this program will ever be extended to an annual coverage of all timber lands, and as these projects are often of a necessity confined to specific timber types, the value of the ranger reports seems unquestionable. Obviously the value of these reports can be increased, for, as previously stated, the reporting officer's remarks concerning each situation are of great value and it is trusted that all subsequent reports will contain more detailed descriptions.

The Forest Insect Laboratory of the Bureau of Entomology and Plant Quarantine, Coeur d'Alene, Idaho, desires to be of any possible assistance to all land-managing agencies in the solution of the forest insect problems.